



**United States Department of Agriculture**  
Forest Service

# **Invasive Plants Report**

## **Colville National Forest Plan Revision Draft Environmental Impact Statement**

Prepared by:

Travis Fletcher  
Colville National Forest  
Invasive Plants Program Manager

October 27, 2015

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [http://www.ascr.usda.gov/complaint\\_filing\\_cust.html](http://www.ascr.usda.gov/complaint_filing_cust.html) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: [program.intake@usda.gov](mailto:program.intake@usda.gov). USDA is an equal opportunity provider, employer and lender.

## Table of Contents

Introduction .....	1
Revision Topics Addressed in this Analysis .....	2
Timber Production.....	2
Motorized Recreation Trails.....	2
Access.....	2
Wildlife.....	2
Riparian and Aquatic Resource Management .....	2
Relevant Laws, Regulations and Policy that Apply .....	2
Affected Environment .....	7
Need for Change .....	8
Old Forest Management and Timber Production .....	8
Motorized Recreation Trails.....	8
Access.....	8
Recommended Wilderness Areas.....	9
Wildlife.....	9
Riparian and Aquatic Resource Management .....	9
Environmental Consequences .....	10
Methodology .....	10
Assumptions.....	10
Methods of analysis.....	10
Incomplete and Unavailable Information.....	10
Spatial and Temporal Context for Effects Analysis .....	11
Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis .....	11
Summary of Effects Common to All Alternatives .....	11
No Action Alternative.....	12
Summary of Effects.....	13
Proposed Action.....	13
Summary of Effects.....	13
Alternative R.....	14
Summary of Effects.....	15
Alternative P .....	16
Summary of Effects.....	16
Alternative B.....	17
Summary of Effects.....	18
Alternative O.....	19
Summary of Effects.....	19
Cumulative Effects – Common to All Alternatives .....	20
Monitoring Recommendations.....	22
Other Agencies and Individuals Consulted.....	22
References.....	23
Appendices.....	25
Appendix A .....	25
Prevention Standards .....	27
Appendix B .....	30

## List of Tables

Table 1. Prediction of Colville National Forest Acres of invasive plant Infestation..... 11  
Table 2. Index values for soil disturbing actions that favor invasion by invasive plants for each  
alternative of the Forest Plan Revision..... 12

DRAFT

## Introduction

Invasive plants are recognized as a major threat to native vegetation and wildlife, as well as to social and economic conditions. The effects of invasive plants can cause economic loss and reductions in the long-term productivity of the land, disrupt recreational use, and reduce resource production. A wide range of species can be invasive, including vascular and nonvascular plants, terrestrial and aquatic animals, and pathogens, such as white pine blister rust and white-nose syndrome, though this report will focus on invasive terrestrial plants that grow in both upland and riparian areas. Aquatic invasive plants are addressed in the hydrology report.

Language concerning why Forest Plans need to consider invasive plants is contained within Forest Service Handbook (FSH) 2150 and 2109 which state that: "All pesticide-use activities on National Forest System lands must be consistent with the standards and guidelines and other management direction in applicable Forest Land and Resource Management Plans (Forest Plans). Forest Plans generally mandate the use of Integrated Pest Management (IPM) for management of forest pests such as insects, diseases, animals, and invasive or unwanted vegetation. Forest Plans should also contain relevant language relating to the management of areas as diverse as Wilderness, Research Natural Areas, Botanical Areas, other reserved areas such as Wild and Scenic Rivers, seed orchards, and nurseries, in addition to general forest and multiple-use areas." Other Direction is found in Forest Service Manual (FSM) 2900 at 2903.2 which states that: When applicable, invasive species management actions and standards should be incorporated into resource management plans at the forest level, and in programmatic environmental planning and assessment documents at the regional or national levels." The area affected by invasive plant species has increased throughout the Interior Columbia Basin during the last 100 years. The same trend has occurred in Northeast Washington during the last 30 years. Invasive plant populations are increasing at a rate of 8 to 12 percent per year on Forest System Lands (USDA Forest Service, 2005 and 1999). Vegetation types that are most susceptible to invasive plant infestation are dominated by dry forest, dry grass, dry shrub, and cool shrub types.

Invasive plants are spread by natural vectors (such as birds, wildlife, insects, wind and water) as well as human related vectors (such as vehicles, equipment, riding stock, pack stock, hiking and livestock grazing). While transportation vectors are important in the spread of invasive plants, soil disturbance also plays a critical role. Invasion and dominance by invasive plants is highly correlated with soil disturbance, but are not limited to disturbed areas (Cox, 1999). Invasive plants can readily invade, occupy, and/or dominate conifer plantations, road prisms, trail heads, trails, mined sites, gravel pits, river corridors, wildlife wallows and bedding areas and rangelands, but they can also establish in naturally occurring disturbances and small forest openings. Recognized human management activities that have some potential to influence invasive plant establishment and spread are; timber and other vegetation management, road construction, road decommissioning, road maintenance, livestock grazing, fire and fuels management, recreation and recreation management and mining.

## Revision Topics Addressed in this Analysis

### *Timber Production*

The risk of an area becoming infested with invasive plants is related to the amount of bare soil conditions that exist and the amount of disturbance in a given area. Timber management, production and other vegetation management are activities that result in producing bare soil conditions within management units, roads, landings and skid trails.

### *Motorized Recreation Trails*

Motorized recreation trails pose some risk for the establishment of invasive plants because the vehicles have the potential to transport weed seeds into areas via the trail system. Trail surfaces are typically devoid of vegetation and therefore when invasive plant seeds come in contact with bare soil, found on trail surfaces, there is the potential for infestations to occur.

### *Access*

Most acres infested with invasive plants on the Colville National Forest are along roadsides. There is a correlation between road miles that are open to the public and the amount of risk for invasive plant establishment and spread due to open roads having some level of disturbance that results in bare ground and the presence of a human related vector of spread, such as vehicles.

### *Wildlife*

Invasive plants have the ability to suppress and out-compete native vegetation and degrade wildlife habitat. The quality of wildlife habitat is affected by invasive plants through decreased foraging areas and a decrease in the quality of available forage.

### *Riparian and Aquatic Resource Management*

Invasive plants have the ability to degrade riparian areas by altering the vegetative composition. Invasive plants may increase the amount of exposed soil in riparian areas which could increase stream sediment delivery in isolated instances. Aquatic invasive plants degrade fish habitat and recreational experiences of the public.

## Relevant Laws, Regulations and Policy that Apply

1. Organic Administration Act of 1897 (16 U.S.C. §§473 et seq.). Authorizes the Secretary to establish regulations governing the occupancy and use of national forests and to protect national forests from destruction.
2. Knutson-Vandenberg Act of June 9, 1930 (16 U.S.C. 576, 576a-576b). Section 3 of the Act, codified at 16 U.S.C. 576b. Provides that the Secretary may require any purchaser of national forest timber to make deposits of money in addition to the payments for the timber, to cover the cost to the United States of planting, sowing with tree seeds, and

cutting, destroying or otherwise removing undesirable trees or other growth, on the national forest land cut over by the purchaser, in order to improve the future stand of timber, or protecting and improving the future productivity of the renewable resources of the forest land on such sale area.

3. Bankhead-Jones Farm Tenant Act of 1937 (7 U.S.C. §§1010 et seq.) Title III of the Act. Authorizes the Secretary to develop a program of land conservation and land utilization in order to correct maladjustments in land use. This statute applies only to national grasslands and land utilization projects.
4. Anderson-Mansfield Reforestation and Revegetation Act of October 11, 1949 (16 U.S.C. 581j (note), 581j, 581k). Requires the agency to accelerate and provide a continuing basis for the needed reforestation and re-vegetation of National Forest System lands and other lands under Forest Service administration or control.
5. Granger-Thye Act of 1950 (16 U.S.C. §§580h). Authorizes the Secretary to use a portion of grazing fees for range improvement projects on National Forest System lands. Specific projects mentioned are artificial re-vegetation, including the collection or purchase of necessary seed and eradication of poisonous plants and invasive plants, in order to protect or improve the future productivity of the range. Section 11 of the Act authorizes the use of funds for rangeland improvement projects outside of National Forest System lands under certain circumstances.
6. Sikes Act (Fish and Wildlife Conservation) of September 15, 1960 (16 U.S.C. 670g-670l, 670o, P.L. 86-797), as amended. Section 201. Directs the Secretary of Agriculture to plan, develop, maintain, coordinate, and implement programs for the conservation and rehabilitation of wildlife, fish and game species, including specific habitat improvement or species management [including invasive species management] projects, on lands and waters under the Secretary's jurisdiction. The Act also provides for carrying out wildlife and fish conservation programs on Federal lands and waters including authority for cooperative State-Federal plans and authority to enter into agreements with States to collect fees to fund the programs identified in those plans.
7. Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. §§528 et seq.). Authorizes the Secretary to: administer National Forest System lands for outdoor recreation, range, timber, watershed, and wildlife and fish purposes; to develop the surface renewable resources for multiple use and sustained yield of several products and services to be obtained from these lands, without impairment of the productivity of the land; and, to cooperate with interested State and local governmental agencies and others in the development and management of the national forests. The Act also recognizes and clarifies Forest Service authority and responsibility to manage wildlife and fish on national forests.
8. The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§1531 et seq.). Provides for the conservation of threatened and endangered species of plants and animals. Section 7 of the Act requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of the species' critical habitat. This section also requires Federal agencies to consult with the U.S. Fish and Wildlife Service (for non-

marine species) or the National Oceanic and Atmospheric Administration's National Marine Fisheries Service whenever an agency action is likely to affect a threatened or endangered species or result in the destruction or adverse modification of its critical habitat.

9. Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 as amended by the National Forest Management Act (NFMA) of 1976. Section 6 of the Act codified at 16 U.S.C. §§1600 et seq. Provides for the Secretary to promulgate regulations, under the principles of the Multiple-Use Sustained-Yield Act of 1960, specifying guidelines for land management plans developed to achieve the goals of the Program. The guidelines should provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives. Further, within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan.
10. Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201, 1201 (note), 1236, 1272, 1305). Section 515. Directs the establishment on the mined areas, and all other lands affected, of a diverse, effective and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation on the area; except that introduced species may be used in the re-vegetation process where desirable and necessary to achieve the approved post mining land use plan.
11. Cooperative Forestry Assistance Act of 1978 (16 U.S.C. 2101 (note), 2101-2103, 2103a, 2103b, 2104-2105. Section 3 (16 U.S.C. 2102). Details the assistance that may be given to State foresters or equivalent State officials and State extension directors, in the form of financial, technical, educational, and related assistance. Section 8 (16 U. S. C. 2104) details actions that may be taken directly on the National Forest System, in cooperation with other Federal departments on other Federal lands, and in cooperation with State foresters, or equivalent State officials, subdivisions of States, agencies, institutions, organizations, or individuals on non-federal lands to: enhance the growth and maintenance of trees and forests; promote the stability of forest related industries and employment associated therewith through the protection of forest resources; aid in forest fire prevention and control; conserve forest cover on watersheds, shelterbelts, and windbreaks; protect outdoor recreation opportunities and other forest resources; and extend timber supplies by protecting wood products, stored wood, and wood in use.
12. The North American Wetland Conservation Act 1989 (16 U.S.C. 4401 (note), 4401-4413, 16 U.S.C. 669b (note)). Section 9 (U.S.C. 4408). directs Federal agencies to cooperate with the Director of the U.S. Fish and Wildlife Service to restore, protect, and enhance the wetland ecosystems and other habitats for migratory birds, fish and wildlife within the lands and waters of each agency to the extent consistent with the mission of such agency and existing statutory authorities.
13. Consolidated Appropriations Resolution, 2003. Section 323 of the Act, codified at 16 U.S.C. 2104. Provides authority to the Forest Service to enter into stewardship contracts with public or private entities or persons to perform services to achieve land management goals for the National Forest System lands that meet local and rural community needs.

Stewardship agreements may be entered into for other land management goals such as the following: removal of vegetation or other activities to promote healthy forest stands, reduction of fire hazards; watershed restoration and maintenance; restoration and maintenance of wildlife and fish habitat; prevention and control of invasive species; and reestablishing native plant species.

14. Healthy Forests Restoration Act of 2003 (H.R. 1904), (16 U.S.C. 6501-6502, 6511-18, 6541-42, 6571-78). Provides improved statutory processes for hazardous fuel reduction projects on certain types of at-risk National Forest System and Bureau of Land Management lands and also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships.
15. The National Historic Preservation Act of 1966 (16 U.S.C. §§470 et seq.). Requires agency heads to assume responsibility for the preservation of historic properties owned or controlled by the agency and to develop a preservation program for the identification, evaluation, and nomination of historic properties to the National Register. Management activities to protect and preserve historic properties and cultural sites may include actions to prevent and control invasive species threatening or impacting those areas. The Act requires agency heads to evaluate the effects of an undertaking on property that is included or eligible for inclusion in the National Register and to afford the Advisory Council a reasonable opportunity to comment on the undertaking. Defines undertaking to include permitting activities or Federal financial assistance under the jurisdiction of an agency.
16. The Plant Protection Act of 2000 (7 U.S.C. 7701 et seq) as amended by the Noxious Weed Control and Eradication Act of 2004 (P.L. 108-412). Among other provisions, the Plant Protection Act authorizes the Secretary of Agriculture to prohibit or restrict the importation, entry, exportation, or movement in interstate commerce of any plant, plant product, biological control organism, noxious weed, article, or means of conveyance, if the Secretary determines that the prohibition or restriction is necessary to prevent the introduction into the United States or the dissemination of a plant pest or noxious weed within the United States. The Act defines the term "Noxious Weed".
17. Wyden Amendment (P.L. 109-54, Section 434). Authorizes the Forest Service to enter into cooperative agreements to benefit resources within watersheds on National Forest System lands. Agreements may be with willing Federal, Tribal, State, and local governments, private and non-government entities, and landowners to conduct activities on public or private lands. Under this authority, the Forest Service may enter into agreements to support or conduct invasive species management activities on aquatic and terrestrial areas owned by local and State governments, Tribes, other Federal agencies, and private individuals or organizations, to benefit and protect the National Forest System and other resources within a watershed at risk from invasive species.
18. Clean Water Act of 1977 (33 U.S.C. 1251, 1254, 1323, 1324, 1329, 1342, 1344; 91 Stat. 1566). This act amends the Federal Water Pollution Control Act of 1972. Section 313 is strengthened to stress Federal agency compliance with Federal, State and local substantive and procedural requirements related to the control and abatement of pollution to the same extent as required of non-governmental entities. Invasive species management to improve

watershed condition supports the Act's charge to maintain the ecological integrity of our nation's waters, including the physical, chemical and biological components.

19. National Environmental Policy Act of 1969 (16 U.S.C. 4321). Requires agencies to analyze the physical, social, and economic effects associated with proposed plans and decisions, to consider alternatives to the action proposed, and to document the results of the analysis. The provisions of NEPA and the Council on Environmental Quality implementing regulations apply to invasive species management (FSM 1950; FSH 1909.15).
20. Wilderness Act of 1964 (16 U.S.C. §§1131 et seq.). Authorizes the Secretary to administer certain congressionally designated National Forest System lands as wilderness. Directs the protection and preservation of these wilderness areas in their natural state, primarily affected by nature and not man's actions. Integrated pest management actions [including aquatic and terrestrial invasive species] in Wilderness are authorized to meet provisions of the Act and consistent with Forest Service policy and guidance for Wilderness management.
21. Federal Noxious Weed Act of 1974 (7 U.S.C. 2814) - Although the Plant Protection Act superseded and repealed most of the Federal Noxious Weed Act of 1974 (FNWA), it left intact section 15 of the act, "Management of undesirable plants on Federal lands" (7 U.S.C. 2814). Section 15 of the FNWA requires Federal land management agencies to develop and establish a management program for control of undesirable plants that are classified under State or Federal law as undesirable, noxious, harmful, injurious, or poisonous, on Federal lands under the agency's jurisdiction (7 U.S.C. 2814(a)). The Act also requires the Federal land management agencies to enter into cooperative agreements to coordinate the management of undesirable plant species on Federal lands where similar programs are being implemented on State and private lands in the same area (7 U.S.C. 2814(c)). The Secretaries of Agriculture and Interior must coordinate their respective control, research, and educational efforts relating to noxious weeds (7 U.S.C. 2814(f)). USDA's Departmental Regulation 9500-10 sets forth the Departmental policy relating to the management and coordination of invasive plants activities among the agencies within USDA and other entities.
22. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), (7 U.S.C. s/s 136 et seq.). Describes pesticide regulations and requirements related to hazardous material use and worker protection standards for employees in the planning and application of pesticides.
23. Executive Order 13112 - Directs federal agencies whose actions may affect the status of invasive species to (1) prevent the introduction of invasive species, and (2) detect and respond rapidly to and control populations of such species in a cost effective and environmentally sound manner, as appropriations allow.
24. Forest Service Manual 2900 - Invasive Species Management, which sets forth National Forest System policy, responsibilities, and direction for the prevention, detection, control, and restoration of effects from aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens).
25. Colville National Forest Weed Prevention Guidelines of 1999

26. Preventing and Managing Invasive Plants Environmental Impact Statement (EIS) and Record of Decision of 2005 including all prevention standards and objectives.

## Affected Environment

Invasive plants occupy approximately 20,000 acres within the Colville National Forest. Most infested acres occur along roads and on dry south facing slopes in low elevations, but there are infestations known to exist in areas of past timber harvest, forest openings, recreation sites, trails, and shorelines of lakes, ponds, rivers and streams. Thirty-five different invasive plants are known to exist on the Forest with all but three being broadleaf herbaceous plants. The average annual amount of acres treated for invasive plants is 2,152 acres per year and was based on efforts for years 2012 - 2014.

Currently the Colville National Forest uses an integrated approach in managing invasive plants which includes prevention measures, inventory, treatment, and monitoring. Integrated pest management is the coordinated use of multiple tactics to assure stable ecosystem function and maintain pest damage below economic levels, while minimizing hazards to human, animals, plants and the environment. The Forest uses a variety of treatment methods to control invasive plants and treatment methods are determined by site specific attributes found at treatment locations. The different treatment methods employed by the Colville National Forest and some examples of each method include:

1. Release of approved Biological Control Agents – Host specific organisms
2. Cultural – The use of fertilizer
3. Manual Removal – Hand pulling and digging
4. Mechanical Treatment – Mowing
5. Chemical – Application of herbicide

These approaches to managing invasive plants would be continued in the no-action alternative and all action alternatives.

In 2005, the regional forester amended the 1988 forest plan with the record of decision (ROD) for the Preventing and Managing Invasive Plants FEIS (USDA Forest Service 2005). This amendment added management direction for invasive plants to the 1988 forest plan, including goals, objectives, standards and a monitoring framework, which guide the Forest in responding to Invasive Plant management challenges. Appendix A displays the goals, objectives, and standards from the R6 2005 ROD. Current forest plan direction for managing invasive plants would continue for the no-action alternative and all action alternatives.

In addition to the invasive plant direction contained in the 2005 FEIS and ROD the Colville National Forest developed Noxious Weed Prevention Guidelines in 1999 which also guide the Forest. Appendix B of this report displays these guidelines. Guidance contained in the Colville National Forest Noxious Weed Prevention Guidelines would continue for the no-action alternative and all action alternatives.

All alternatives were assessed for their predicted ability to meet the desired condition and by the degree to which ground disturbance could lead to conditions that would increase the invasive species spread rate.

Current and ongoing management direction has the potential to meet this desired condition. The Preventing and Managing Invasive Plants FEIS (USDA Forest Service 2005) disclosed that the adopted invasive plant management direction had a “moderate to high potential to reduce rate of spread,” and concluded that effective treatment of the existing populations along with prevention measures applied to land uses and activities could reduce the current 8 to 12 percent rate of spread to about 4 to 6 percent. Thus, to meet the desired condition, both current infestations and new infestations need to be contained, controlled, or eradicated.

## Need for Change

### *Old Forest Management and Timber Production*

In the revision of the Forest Plan, three broad-scale concerns drove the need to consider how we address old forest management, especially the current reserve system approach at the landscape scale. These are:

- The recent history of uncharacteristic levels of disturbances resulting from fire and insect and disease activity that would likely continue into the future.
- The interaction between disturbances and climate change that elevates the importance of restoring landscape resiliency.
- Uncertainty about the recovery and viability of old forest-dependent species given the increased risk of uncharacteristically severe disturbances that is likely to be exacerbated by climate change impacts.

### *Motorized Recreation Trails*

The current land management plan provides direction for summer and winter motorized uses, including identifying areas where such use may not be authorized or is limited, mainly for protection of aquatic, plant, and wildlife habitats.

The goal for recreation settings and experiences would include providing a spectrum of high quality, nature-based outdoor recreational settings where visitors access the Forest, including access to the biological, geological, scenic, cultural, and experiential resources of the Forest. Where the visitor’s outdoor recreational experience involves few conflicts with other users, access is available for a broad range of dispersed recreation activities such as dispersed camping, rock climbing, boating, mushroom and berry picking, hunting, and fishing and these experiences are offered in an environmentally sound manner, are within budget limits, and contribute to the local economy.

### *Access*

Three broad concerns drove the need to address road density:

- 1) the Forest can no longer afford to properly maintain the road system at current operational maintenance levels,
- 2) the current road system is not aligned with current and future resource management objectives, and
- 3) the existing road management direction is confusing and difficult to follow because it is scattered throughout current Forest Plan (Colville National Forest Land and Resource Management Plan), Forest Plan amendments (East-side Screens, Interim Inland Native Fish Strategy for the Intermountain, Northern, and Pacific Northwest Regions [INFish, USDA Forest Service 1994c and 1995]), national-level decisions (the Roadless Rule), and interim policy (e.g., Grizzly Bear No-Net-Loss, Lynx Agreement, the Interior Columbia Basin Strategy).

### *Recommended Wilderness Areas*

By law, all National Forest System lands must be evaluated for possible wilderness recommendation during the plan revision process. The result of that evaluation shows whether a need exists for additional wilderness and what trade-offs may exist if the area is eventually designated part of the National Wilderness Preservation System.

Currently, the Salmo-Priest Wilderness covers about 3 percent of the Colville National Forest and evaluation showed a need for additional wilderness opportunities on the Forest. A review of possible areas showed some are available to fill this need.

### *Wildlife*

The current Forest Plan provides limited protection for habitat connectivity, providing wildlife and aquatic crossing structures, and managing activities adjacent to the structures so they are used by wildlife.

### *Riparian and Aquatic Resource Management*

The current Forest Plan includes riparian management direction from the Inland Native Fish Strategy (INFISH, USDA Forest Service 1994c and 1995). This approach appears to have either maintained or improved riparian and aquatic habitat conditions at the watershed and larger scales.

Objectives for Riparian Management Areas would give emphasis to maintaining or restoring the riparian and aquatic structure and function of intermittent and perennial streams, confer benefits to riparian-dependent plant and animal species, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, contribute to improved water quality and flows, and contribute to a greater connectivity of the watershed for both riparian and upland species.

Desired conditions for Riparian Management Areas within any given watershed are to have compositions of native flora and fauna and a distribution of physical, chemical, and biological conditions commensurate with natural processes.

# Environmental Consequences

## Methodology

Since activities associated with timber management and production produce the largest amount of bare soil conditions, the acres of suitable timberlands by alternative would be used as a surrogate to predict the amount of risk for invasive plant spread. Specific locations that are likely to be at risk for invasive plant establishment and spread through vegetation and fuels management are roads, landings and skid trails because of the high levels of use which occur and result in bare soils.

Potential changes to access on the Colville National Forest through the various alternatives will also be discussed in this report to evaluate how invasive plants could be influenced by management activities.

This report will not consider livestock grazing in evaluating the effects of the various alternatives since allotment status and stocking rates would not change as a result of the Forest Plan Revision effort or the alternatives considered.

## Assumptions

- The 1998 *Environmental Assessment for the Colville National Forest Integrated Noxious Weed Treatment* (Forest Service 1998) analyzed and approved the use of manual, biological, and chemical control agents (herbicides) for the treatment of noxious or invasive species. This document and Decision made to implement "Alternative C" would continue to guide invasive plant management on the Colville National Forest until such time as it is replaced by a newer document/decision.
- The 2005 *Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants Final Environmental Impact Statement (FEIS) and Record of Decision (ROD)* along with its standards, goals and objectives would continue to guide the Colville National Forest for the No Action Alternative.
- Compliance with terms and conditions that implement the reasonable and prudent measures described in applicable Biological Opinions providing protection for federally listed species.

## *Methods of analysis*

This analysis relies on the timber suitability analysis and the acres generated for each alternative in it. To compare the different alternatives, they are evaluated against the No Action Alternative that would continue existing management.

Also considered in this analysis are the desired conditions for road densities since forest roads have the potential to influence rates of spread and acres infested for invasive plants.

## *Incomplete and Unavailable Information*

Numbers of road miles projected to exist through implementation of the revised Forest Plan.

## *Spatial and Temporal Context for Effects Analysis*

This analysis is completed for all National Forest System lands within the administrative boundaries of the Colville National Forest. It is assumed that the effective life of the plan would be 15-20 years and this analysis discusses the effects to invasive plants over this time period.

## *Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis*

- Invasive plants on private property that threaten to spread to NFS lands.
- Invasive plants on NFS lands with the potential to affect adjacent private lands
- People driving on roads and motorized trails on NFS lands
- Livestock Grazing
- Climate change

## Summary of Effects Common to All Alternatives

Given the Colville National Forest's current level of invasive plant occurrence, and a predicted rate of spread equaling 5% per year, it is expected that completing approximately 2,000 acres of invasive plant treatments and/or restoration activities relating to restoring native vegetation would allow the Forest to proceed toward and achieve a desired condition where invasive plant infestations are not increasing in number or size, occur at low densities and are reduced or removed.

Table 1 of this report documents that beginning with approximately 20,000 acres of invasive plants and accomplishing 2,000 acres of treatment each year while experiencing a 5% rate of spread would allow the Forest to trend to nearly no invasive plants within 15 years following implementation. The information in Table 1 is only used as an analysis tool and given the reality of invasive plant populations being in a constant state of change, it is anticipated that the process of invasive plant invasion and treatment would be dynamic and may not follow predictions.

**Table 1. Prediction of Colville National Forest Acres of invasive plant Infestation**

Year	Beginning	New Acres	Treated Acres	Ending Acres
1	20000	1000	2000	19000
2	19000	950	2000	17950
3	17950	898	2000	16848
4	16848	842	2000	15690
5	15690	784	2000	14474
6	14474	724	2000	13198
7	13198	660	2000	11858
8	11858	593	2000	10451
9	10451	523	2000	8973
10	8973	449	2000	7422
11	7422	371	2000	5793
12	5793	290	2000	4083
13	4083	204	2000	2287

Year	Beginning	New Acres	Treated Acres	Ending Acres
14	2287	114	2000	401
15	401	20	421	0

The actions and activities resulting from the various alternatives have the potential to create conditions conducive to the spread of invasive plants, but management direction would be in place to limit the potential extent of spread and infestation. However, since invasion and dominance by invasive plants is highly correlated to soil disturbances (Cox 1999), the greater the potential extent and intensity of timber harvest, fuels reductions, road maintenance and prescribed fire, the greater the potential for indirect effects from soil disturbances (e.g., conditions favorable to invasive plants).

To compare alternatives, an index was created to display the relative amount of soil disturbing activities related to timber harvest and associated actions for each alternative. The index relies upon the timber suitability analysis completed for the Forest Plan Revision effort. The amount of suitable acres for the “No Action” alternative would be the base line and would have a coefficient value of 1. It is assumed that the risk for invasive plant establishment and spread would be associated with suitable forest land and that the amount of potential soil disturbance would change equally with the change in acres suitable.

The index values for the Proposed Action and alternatives R, P, B and O are displayed relative to the No Action alternative in Table 2. There is no standard for measuring soil disturbance as a predictor of nonnative plant invasion, either as an observable measurable value or as a percent of managed lands. The index serves only to compare alternatives and suggest which alternatives are more or less likely to create conditions favorable to the invasion of nonnative invasive plants. In fact, management direction for the Invasive Plants program requires that each project prevent or minimize potential for invasive species introduction, establishment, and/or spread.

**Table 2. Index values for soil disturbing actions that favor invasion by invasive plants for each alternative of the Forest Plan Revision**

	No Action	Proposed Action	Alt. R	Alt. P	Alt. B	Alt. O
Suitable Forest Lands (acres)	535,725	653,242	129,420	656,628	384,485	347,535
Index Values	1	1.22	0.24	1.23	0.72	0.65

Compared to the No Action Alternative, the Proposed Action and Alternative P would represent a greater risk for invasive plant establishment and spread by creating opportunities for invasive plants, while Alternatives R, B, and O represent less risk. At the project level, all management activities would be designed to include measures that would help prevent invasive plant spread.

## No Action Alternative

This is the current Colville Forest Plan as amended. No action means the current management direction would continue.

## *Summary of Effects*

The No Action alternative would result in the same level of risk for invasive plants as has been experienced under the existing 1988 Plan. This is because the amount of suitable forest lands does not change in this alternative from the 1988 Plan.

### Timber Production

An index value rating of 1 found in Table 2 for the no action alternative equates to the risk of invasive plant establishment and spread from timber production, and associated road and fuels reduction work, being equal to the current risk. The costs associated with treating invasive plants and the acres needing treatment are predicted to be the same as it is currently.

### Motorized Recreation Trails

The no action alternative would result in the same level of risk from motorized recreation trails, and use of these trails, as current management. Therefore, there is no change.

### Access

The no action alternative would result in the same level of risk from access as current management. Therefore, there is no change.

### Wildlife

The quality of wildlife habitat resulting from invasive plant establishment and spread for this analysis is influenced by the amount of risk present. Since the largest risk factor is related to timber production, and associated management practices, risks to wildlife habitat would be in alignment with the risks from timber management.

The no action alternative would result in the same level of risk to the quality of wildlife habitat from invasive plants as current management. Therefore, there is no change.

### Riparian and Aquatic Resource Management

The no action alternative would result in the same level of risk to riparian and aquatic resource management as current management. Therefore, there is no change at the forest-wide level.

## Proposed Action

This is the June 30, 2012, proposed action released to the public with the draft plan revision document providing supporting information.

## *Summary of Effects*

The Proposed Action alternative would result in an elevated level of risk for invasive plants compared to the No Action alternative and that which has been experienced under the existing 1988 Plan. This is because the amount of suitable forest lands is predicted to increase and proposed road density limits are not likely to have an appreciable change.

## Timber Production and Management

An index value rating of 1.22 found in Table 2 for the Proposed Action alternative equates to the risk of invasive plant establishment and spread from timber production, and associated road and fuels reduction work, being 22% greater than the risk in the current Forest Plan. This 22% increase in risk has the potential to result in a need to treat more acres of invasive plants than experienced currently. This potential need to treat more acres could also result in increased costs for invasive plant treatment, increased monitoring and inspection efforts, and increased coordination efforts around invasive plant issues.

## Motorized Recreation Trails

The Proposed Action alternative could experience a slightly higher level of risk from motorized recreation trails, and use of these trails, to invasive plants spread when compared to current management. While the management area identified as “Backcountry Motorized” is projected to increase by approximately 4%, it cannot be said with any level of certainty that the actual presence on motorized trails would increase under this alternative.

## Access

The Proposed Action alternative would not likely result in a substantial change in risk to invasive plant spread from access compared to current management. With road density limits of 2 miles/square mile for focused restoration areas and 3 miles/square mile for general restoration areas, there would not be an appreciable change in open road miles.

## Wildlife

The quality of wildlife habitat resulting from invasive plant establishment and spread for this analysis is influenced by the amount of risk present. Since the largest risk factor is related to timber production, and associated management practices, risks to wildlife habitat would be in alignment with the risks from timber management.

The Proposed Action alternative would result in a 22% increase in risk to the quality of wildlife habitat from invasive plants compared to current management.

## Riparian and Aquatic Resource Management

The Proposed Action alternative would result in a similar level of risk to riparian and aquatic resource management from invasive plant establishment and spread as current management. Therefore, there would be little change.

## Alternative R

Alternative R responds to public comments that support old forest protection through static late forest structure reserve land allocations and a 21-inch upper diameter limit on cutting trees. It also addresses comments advocating for increased wilderness, fewer miles of motorized trail, and additional protections for wildlife. Likewise, Alternative R responds to public concerns that the proposed action may not provide watershed and aquatic resource protection as effective as the current forest plan amendment (INFISH) and that the proposed action may not adequately

manage the potential for detrimental effects of activities within riparian areas. This alternative is based on a management option developed by a coalition of conservation groups.

Alternative R recommends 19% of the Forest for wilderness designation. Alternative R has the lowest level of Backcountry Motorized management area (.006% of the Forest) and the lowest road density desired conditions for Late Forest Structure and General Restoration areas. The plan components for motorized use and road density directly address public issues concerning potential impacts that road access and summer motorized trail use may have on aquatic, riparian, and wildlife habitats.

### *Summary of Effects*

Alternative R would result in a substantially reduced level of risk for invasive plants compared to the No Action alternative and that which has been experienced under the existing 1988 Plan. This is because the amount of suitable forest lands is predicted to decrease as a myriad of protections are proposed in this alternative.

Changes to road density are likely to result in fewer roads on the Forest. Having fewer open roads would reduce the amount of bare soil associated with roads and human-related vectors of spread through vehicles would be decreased.

### **Timber Production and Management**

An index value rating of 0.24 found in Table 2 for Alternative R equates to the risk of invasive plant establishment and spread from timber production, and associated road and fuels reduction work, being 76% less than the risk in the current Forest Plan. This 76% decrease in risk has the potential to result in a need to treat fewer acres of invasive plants than experienced currently. This potential need to treat fewer acres could also result in decreased costs for invasive plant treatment and decreased monitoring and inspection efforts.

### **Motorized Recreation Trails**

Alternative R would experience a reduced level of risk from motorized recreation trails, and use of these trails, to invasive plants spread when compared to current management. The "Backcountry Motorized" Management Area in this alternative would only comprise approximately 1 % of the Colville National Forest. This is 60% less than the area identified in the "No Action" alternative and the 1988 plan.

Assuming that actual miles of motorized recreation trails would be reduced as a result of the change in the amount of "Backcountry Motorized" acres, the trail system would have a lower risk to invasive plant establishment and spread by there being fewer miles of trail available for use.

### **Access**

Alternative R would result in a reduction in the risk to invasive plant spread from access compared to current management. With road density limits of 1 mile/square mile for focused restoration areas and 2 miles/square mile for general restoration areas, there would be fewer roads available to be driven. Therefore, potential for invasive plants to be spread from the road system would be less.

Since this alternative would result in a reduction in the amount of road miles over the life of the plan, there would be less bare soil associated with the maintenance and use of these roads. It is expected that decommissioned roads would have permanent vegetative cover, which would naturally deter invasive plants by not providing available niches to occupy in the future.

### Wildlife

The quality of wildlife habitat resulting from invasive plant establishment and spread for this analysis is influenced by the amount of risk present. Since the largest risk factor is related to timber production, and associated management practices, risks to wildlife habitat would be in alignment with the risks from timber management.

The Proposed Action alternative would result in a 76% decrease in risk to the quality of wildlife habitat from invasive plants compared to current management.

### Riparian and Aquatic Resource Management

Through implementation of Alternative R there would be a similar risk to riparian management, compared to the No Action alternative, since similar strategies would be employed in regard to limiting ground disturbance within the riparian management areas. Following the guidance in the Aquatic Riparian Conservation Strategy + (ARCS+) concerning Aquatic Invasive Species the risk of infestation and spread of these plants would be reduced by the efforts to clean equipment and avoid contaminating new sites.

## Alternative P

Many public comments expressed concern that wilderness designation may result in lower revenue to local economies due to reduced recreational opportunities. This alternative utilizes many plan components from the Proposed Action while also addressing economic concerns associated with wilderness. Alternative P proposes a lower amount of recommended wilderness than the proposed action (5% of the landscape). In addition, Alternative P proposes a moderate level of non-motorized backcountry use (12%).

To assure adequate protection for terrestrial and aquatic habitats from roads and motorized trails, desired road density conditions are the same as Alternative R. Riparian widths are the same as in the proposed action.

### *Summary of Effects*

Alternative P would result in an elevated level of risk for invasive plants compared to the No Action alternative and that which has been experienced under the existing 1988 Plan. This is because the amount of suitable forest lands is predicted to increase. The increase is likely curbed to some degree by the reduction in road miles that should be expected over the life of the plan for this alternative.

### Timber Production and Management

An index value rating of 1.23 found in Table 2 for Alternative P equates to the risk of invasive plant establishment and spread from timber production, and associated road and fuels

reduction work, being 23% greater than the risk in the current Forest Plan. This 23% increase in risk has the potential to result in a need to treat more acres of invasive plants than experienced currently. This potential need to treat more acres could also result in increased costs for invasive plant treatment, increased monitoring and inspection efforts, and increased coordination efforts around invasive plant issues.

### Motorized Recreation Trails

Alternative P could experience a slightly higher level of risk from motorized recreation trails, and use of these trails, to invasive plants spread when compared to current management. While the management area identified as “Backcountry Motorized” is projected to increase by approximately 3 %, it cannot be said with any level of certainty that the actual presence on motorized trails would increase under this alternative.

### Access

Alternative P would result in a reduction in the risk to invasive plant spread from access compared to current management. With road density limits of 1 mile/square mile for focused restoration areas and 2 miles/square mile for general restoration areas, there would be fewer roads available to be driven. Therefore, potential for invasive plants to be spread from the road system would be less.

Since this alternative would result in a reduction in the amount of road miles over the life of the plan, there would be less bare soil associated with the maintenance and use of these roads. It is expected that decommissioned roads would have permanent vegetative cover, which would naturally deter invasive plants by not providing available niches to occupy in the future.

### Wildlife

The quality of wildlife habitat resulting from invasive plant establishment and spread for this analysis is influenced by the amount of risk present. Since the largest risk factor is related to timber production, and associated management practices, risks to wildlife habitat would be in alignment with the risks from timber management.

The Proposed Action alternative would result in a 23% increase in risk to the quality of wildlife habitat from invasive plants compared to current management.

### Riparian and Aquatic Resource Management

Through implementation of Alternative R there would be a similar risk to riparian management, compared to the No Action alternative, since similar strategies would be employed in regard to limiting ground disturbance within the riparian management areas. Following the guidance in the Aquatic Riparian Conservation Strategy + (ARCS+) concerning Aquatic Invasive Species the risk of infestation and spread of these plants would be reduced by the efforts to clean equipment and avoid contaminating new sites.

## Alternative B

This alternative combines feedback from diverse interest groups and incorporates management strategies supported by the Northeast Washington Forestry Coalition. Alternative B addresses the concerns of multiple constituencies in one alternative by designating restoration and timber

management zones, recommending the highest level of wilderness designation and the least amount of area for backcountry management and backcountry motorized use.

Alternative B emphasizes two management areas that focus on forest vegetation: the Restoration Zone management area, which emphasizes late forest structure on 31% of the landscape, and the Active Management area, which emphasizes timber production on 43% of the Forest. The Restoration Zone and the Active Management area are similar to the Focused and General Restoration areas in the Proposed Action and other alternatives. Like the No Action alternative, Eastside Screens are retained. Unlike the other alternatives, one management zone (Active Management) emphasizes even-aged management (clear-cuts) for timber production.

Alternative B provides for the highest acreage of recommended wilderness (PARW) across all alternatives, 20.1% of the landscape, and the least amount of backcountry summer and winter motorized (BCM) and non-motorized (BC) recreation opportunities. Unlike any of the other alternatives, Alternative B responds to concerns related to the impact of the road system on terrestrial and aquatic habitats by limiting the total miles of Forest Service roads to no more than the current level.

Any objectives or goals not specifically changed by the public entities that developed this alternative incorporate existing (1988) Forest Plan direction for the affected resource areas.

### *Summary of Effects*

Alternative B would result in a reduced level of risk for invasive plants compared to the No Action alternative and that which has been experienced under the existing 1988 Plan. This is because the amount of suitable forest lands is predicted to decrease.

### **Timber Production and Management**

An index value rating of 0.72 found in Table 2 for Alternative B equates to the risk of invasive plant establishment and spread from timber production, and associated road and fuels reduction work, being 24% less than the risk in the current Forest Plan. This 24% decrease in risk has the potential to result in a need to treat fewer acres of invasive plants than experienced currently. This potential need to treat fewer acres could also result in decreased costs for invasive plant treatment and decreased monitoring and inspection efforts.

### **Motorized Recreation Trails**

Alternative B would experience a reduced level of risk from motorized recreation trails, and use of these trails, to invasive plants spread when compared to current management. The "Backcountry Motorized" Management Area in this alternative would comprise less than 1% of the Colville National Forest. This is 60% less than the area identified in the "No Action" alternative and the 1988 plan.

Assuming that actual miles of motorized recreation trails would be reduced as a result of the change in the amount of "Backcountry Motorized" acres, the trail system would have a lower risk to invasive plant establishment and spread by there being fewer miles of trail available for use.

## Access

Alternative B would result in the same level of risk from access as current management since the numbers of miles of roads are described to stay the same. Therefore, there is no change.

## Wildlife

The quality of wildlife habitat resulting from invasive plant establishment and spread for this analysis is influenced by the amount of risk present. Since the largest risk factor is related to timber production, and associated management practices, risks to wildlife habitat would be in alignment with the risks from timber management.

Alternative B would result in a 24% decrease in risk to the quality of wildlife habitat from invasive plants compared to current management.

## Riparian and Aquatic Resource Management

Alternative B would result in the same level of risk to riparian and aquatic resource management as current management. Therefore, there is no change.

## Alternative O

This alternative comes from a series of public, collaborative meetings run by the Forest Service that focused on motorized recreation, wilderness recommendations, and vegetation management and reflects areas of general agreement among participants in those meetings. The Forest Service fully developed this alternative using the proposed action to fill in the gaps not addressed in the collaborative process.

Alternative O emphasizes summer and winter non-motorized opportunities in a backcountry, unroaded setting and minimizes recommended wilderness. In addition, the Kettle Crest Special Interest Area is proposed to provide outstanding recreational values in a semi-primitive setting while allowing other uses, to address public disagreement about recommending this area for wilderness. Backcountry motorized (BCM) areas are also emphasized.

Alternative O manages late forest structures using a fixed reserve system and utilizes the Eastside Screens. This alternative proposes two management areas to address vegetation management: the Restoration Zone management area to restore the historic range of variation, and the Responsible management area that emphasizes timber production. The management zones are very similar to those proposed in Alternative B, the other alternative informed by collaborative processes. The total percentage of the Forest allocated to vegetation management (72 percent) is similar to Alternative B (73 percent) though Alternative O has a greater percentage in the Restoration Zone management area than Alternative B.

(Summary description of Alt. 6 goes here, including agreed on mitigation measures)

## *Summary of Effects*

Alternative O would result in a reduced level of risk for invasive plants compared to the No Action alternative and that which has been experienced under the existing 1988 Plan. This is because the amount of suitable forest lands is predicted to decrease.

## Timber Production and Management

An index value rating of 0.65 found in Table 2 for Alternative B equates to the risk of invasive plant establishment and spread from timber production, and associated road and fuels reduction work, being 35% less than the risk in the current Forest Plan. This 35% decrease in risk has the potential to result in a need to treat fewer acres of invasive plants than experienced currently. This potential need to treat fewer acres could also result in decreased costs for invasive plant treatment and decreased monitoring and inspection efforts.

## Motorized Recreation Trails

Alternative O could experience a slightly higher level of risk from motorized recreation trails, and use of these trails, to invasive plants spread when compared to current management. While the management area identified as “Backcountry Motorized” is projected to increase by approximately 3 %, it cannot be said with any level of certainty that the actual presence on motorized trails would increase under this alternative.

## Access

Alternative O would result in the same level of risk from access as current management since the numbers of miles of roads are described to stay the same. Therefore, there is no change.

## Wildlife

The quality of wildlife habitat resulting from invasive plant establishment and spread for this analysis is influenced by the amount of risk present. Since the largest risk factor is related to timber production, and associated management practices, risks to wildlife habitat would be in alignment with the risks from timber management.

Alternative O would result in a 35% decrease in risk to the quality of wildlife habitat from invasive plants compared to current management.

## Riparian and Aquatic Resource Management

Alternative O would result in a similar level of risk to riparian and aquatic resource management from invasive plant establishment and spread as current management. Therefore, there would be little change.

## Cumulative Effects – Common to All Alternatives

Cumulative effects may arise from the introduction of invasive species from lands adjoining the plan area. These lands consist of other Federal (BLM), tribal, state, county, or privately owned lands. The plant invasion process occurs in three phases: introduction, establishment, and spread. Invasive species are introduced via vectors, such as wind, water, or wildlife, in addition to the actions of people, which move seeds or plant fragments from one location to another. Wind and water, in particular, are major natural dispersal agents. For example, windblown seed of rush skeleton weed can be carried up to 20 miles (USDA Forest Service 2005). Water is a primary aid in the dispersal of many species, including Japanese knotweed. Rivers and waterways have been identified as one of the biggest spread mechanisms for invasive plants (Sheley et al. 1995). Various wildlife species can contribute to the spread of invasive plant species by dispersing seeds in their dung, on their coats or feathers, or between their hooves. Ants have even been identified

as one of the dispersal agents for the seeds of Scotch broom (Parker, et al. 1998). Though invasive plant propagules (seeds or plant fragments capable of establishing) may originate from outside sources, there is potential for them to affect the Colville National Forest. Therefore, the cumulative effects analysis area is considered to be Northeastern Washington and it includes lands of all ownership.

People traveling to the Colville National Forest may transport invasive plant propagules from adjacent or even distant lands. This may be done through a variety of means: motor vehicles, clothing and footwear, pets, stock, etc. Motor vehicles, in particular, have been shown to pick up and move invasive species seeds that can be deposited along roads (Schmidt 1989 and Hodgkinson and Thompson 1997). Roadside habitats are particularly susceptible to plant invasions for a number of reasons. Roads eliminate some of the physical and environmental barriers that help prevent invasion by increasing available light and dispersal opportunities. Disturbances associated with the use and maintenance of roads provide habitat easily exploited by invasive species, which can then seed themselves relatively swiftly along roadsides or be transported by animals or people (vehicles). Roads are primary vectors for the spread of invasive plants and the most likely vector for human transport of invasive plant propagules from outside the plan area.

Cumulative effects may be incurred from the transport and establishment of nonnative invasive plants from sources adjacent to the plan area. Likewise, weeds from the National Forest System lands could spread to adjacent areas. However, these effects are expected to be small compared to the anticipated spread from invasive plants sites within the plan area. While the forest plan addresses invasive plant spread via prevention standards, invasive plants would continue to move freely across borders, to and from ownerships, because the movement of seeds and propagules via wind, water, or wildlife are largely beyond the control of the Forest Service.

An effect associated with mechanical treatments and livestock grazing is the potential to spread invasive species from adjacent lands. New weed populations could occur from vehicle-transported seeds, disturbed soils and increased light availability following mechanical treatments or creation of seedbeds by livestock use. Livestock and wildlife can spread weed seeds, but livestock and wildlife use results in fewer new weed populations than those established along roads and trails by seeds spread from vehicle tires, equipment tracks, and/or attached soil (Tyser and Worley, 1992; Tyser and Key, 1988; Gelbard and Harrison, 2003). This circumstance is attributed to the higher amount of biotic and below ground biotic resistance experienced in areas other than roads and trails (Gelbard and Harrison, 2003). All alternatives would contribute similarly to the control, treatment, and eradication of invasive plant species introduced from outside the forests.

Cumulative effects may also result from climate change. Much of the research on invasive species interactions with climate change has contributed to the growing body of evidence that global warming has enabled invasive species to expand to areas where they were not previously able to persist (Dukes and Mooney 1999, Weltzin et al. 2003, Thuiller et al. 2007, and Walther et al. 2009). Some researchers have modeled range expansions for some invasive species (*Centaurea solstitialis* and *Tamarix*) while predicting reduced invasion risk and significant range contractions for others (*Bromus tectorum*, *Euphorbia esula*, and *Centaurea biebersteinii*) by the

year 2100 (Bradley et al. 2009). As the climate changes, the ranges of invasive plant species would change; some species may become less invasive, and others may become more invasive. Given their adaptive traits, invasive plants may be able to out-compete native species in the migration process to new suitable habitat (Hellamann et. al., 2008). Compared to a stable climate, the degree to which climate change has contributed to the current spread of invasive plants is unclear.

The forest plan responds to the challenges of increased risk of invasion from invasive plants, whether or not introduced from external sources and whether or not climate change may influence their spread, by incorporating standards to prevent the transport and establishment of invasive plant propagules and by including objectives to reduce the area infested by invasive plants over time. The cumulative effects do not add significantly to effects expected from this alternative.

By the Colville National Forest implementing invasive plant control measures and prevention strategies through the Forest Plan revision, a positive cumulative effect would be realized when considered in light of the control and prevention measures being employed on adjacent ownerships which include the Idaho Panhandle National Forest, Okanogan-Wenatchee National Forest, private lands under the control of county weed boards, state lands and Canadian lands to the north managed by the Ministry of Forestry.

## Monitoring Recommendations

The Inventory and Monitoring Plan Framework contained as Appendix M of the 2005 Preventing and Managing Invasive Plants EIS is incorporated into the Forest Plan Revision as required monitoring for invasive plants.

## Other Agencies and Individuals Consulted

None

## References

- Bradley, B. A., M. Oppenheimer and D. S. Wilcove. 2009. Climate change and plant invasions: restoration opportunities ahead? *Global Change Biology* 15: 1511-1521.
- Cox, G.W. 1999. *Alien Invasion in North America and Hawaii: Impacts on Natural Ecosystems*. Island Press.
- Dukes, J.S. and H.A. Mooney. 1999. Does global change increase the success of biological invaders? *TREE* 14(4): 135-139.
- Gelbard, J. and S. Harrison. 2003. Roadless Habitats as refuges for Native Grasslands: Interactions with Soil, Aspect and Grazing. *Ecological Applications* 13:2. pp. 404-415.
- Hellamann, J.J.; J.E. Byers; B.G. Bierwagen; and J.S. Dukes. 2008. Five potential consequences of climate change for invasive species. *Conservation Biology* 22(3): 534-543.
- Hodkinson, D.J., and Thompson, K. 1997. Plant Dispersal: The Role of Man. *Journal of Applied Ecology*. 34: p.1484-96.
- Mote, P.W. 2004. How and why is Northwest climate changing? Pp. 11-22 In D.L Peterson, J.L. Innes, and K. Obrian (eds.). *Climate change, carbon, and forestry in Northwestern North America: Proceedings of a Workshop*. November 14-15, 2001. Orcas Island, Washington. USDA Forest Service, Pacific Northwest Research Station, Gen. Tech. Rept. PNW-GTR-614.
- Parker, B., Miller, G., and Burrill, L.C. 1998. *Scotch Broom*. Pacific Northwest Extension Publication. 4p.
- Schmidt, W. 1989. Plant Dispersal by motor cars. *Vegetation* 80:p.147-52.
- Sheley, R.L., Mullin, B.H., and Fay, P.K. 1995. Managing Riparian Weeds. *Rangelands* 17(5):154-7.
- Thuiller, W., D. M. Richardson and G. F. Midgley. 2007. Will climate change promote alien plant invasions? In: *Ecological Studies*, Vol. 193. W. Nentwig, ed. Berlin. Berlin. Springer-Verlag: 197-211.
- Tyser, R. and C. Key. 1988. Spotted Knapweed in Natural Area Fescue Grasslands: An Ecological Assessment. *Northwest Science* 62:4. pp. 151-160.
- Tyser, R. and C. Worley. 1992. Alien Flora in Grasslands Adjacent to Road and Trail Corridors in Glacier National Park, Montana (U.S.A.). *Conservation Biology* 6:2. pp. 253-262. Available at <http://www.jstor.org/stable/2386247>
- USDA Forest Service. 1999. *Stemming the Invasive Tide: Forest Service Strategy for Noxious and Nonnative Invasive Plant Management*.
- USDA Forest Service. 2004. *National Strategy and Implementation Plan for Invasive Species*.

- USDA Forest Service, 2005. Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants and accompanying Record of Decision, US Forest Service, Pacific Northwest Region, Portland, OR.
- U.S. Department of Agriculture, Forest Service. 1988. Colville National Forest Land and Resource Management Plan, Final Environmental Impact Statement, and Record of Decision. Pacific Northwest Region, Portland, OR.
- U.S. Department of Agriculture, Forest Service, Colville National Forest. 1998. Environmental Assessment, Integrated noxious weed treatment. Unpublished. Colville National Forest. Colville, WA.
- U.S. Department of Agriculture, Forest Service, Colville National Forest. 1999. Noxious Weed Prevention Guidelines for the Colville National Forest. Unpublished guidelines. Colville National Forest. Colville, WA.
- Walther, G.-R., A. Roques, P. E. Hulme, M. T. Sykes, P. Pyšek, I. Kühn, M. Zobel, S. Bacher, Z. Botta-Dukát, H. Bugmann, B. Czúcz, J. Dauber, T. Hickler, V. Jarošík, M. Kenis, S. Klotz, D. Minchin, M. Moora, W. Nentwig, J. Ott, V. E. Panov, B. Reineking, C. Robinet, V. Semchenko, W. Solarz, W. Thuiller, M. Vilà, K. Vohland and J. Settele. 2009. Alien species in a warmer world: risks and opportunities. *Trends in Ecology and Evolution* 24(12): 686-693.
- Weltzin, J. F., M. E. Loik, S. Schwinning, D. G. Williams, P. A. Fay, B. M. Haddad, J. Harte, T. E. Huxman, A. K. Knapp, G. Lin, W. T. Pockman, M. R. Shaw, E. E. Small, M. D. Smith, S. D. Smith, D. T. Tissue and J. C. Zak. 2003. Assessing the response of terrestrial ecosystems to potential changes in precipitation. *BioScience* 53(10): 941-952.
- Wright, Henry A. 1974. Range Burning. *Journal of Range Management* 27(1): 5-11.

## Appendices

### Appendix A

#### **Desired Future Condition, Goals, Objectives and Standards from the Pacific Northwest Region's 2005 Preventing and Managing Invasive Plants Record of Decision**

Desired Future Condition - In National Forest lands across Region Six, healthy native plant communities remain diverse and resilient, and damaged ecosystems are being restored. High quality habitat is provided for native organisms throughout the region. Invasive plants do not jeopardize the ability of the National Forests to provide goods and services communities expect. The need for invasive plant treatment is reduced due to the effectiveness and habitual nature of preventative actions, and the success of restoration efforts.

**Goal 1** - Protect ecosystems from the impacts of invasive plants through an integrated approach that emphasizes prevention, early detection, and early treatment. All employees and users of the National Forest recognize that they play an important role in preventing and detecting invasive plants.

Objective 1.1 - Implement appropriate invasive plant prevention practices to help reduce the introduction, establishment and spread of invasive plants associated with management actions and land use activities.

Objective 1.2 - Educate the workforce and the public to help identify, report, and prevent invasive plants.

Objective 1.3 - Detect new infestations of invasive plants promptly by creating and maintaining complete, up-to-date inventories of infested areas, and proactively identifying and inspecting susceptible areas not infested with invasive plants.

Objective 1.4 - Use an integrated approach to treating areas infested with invasive plants. Utilize a combination of available tools including manual, cultural, mechanical, herbicides, biological control.

Objective 1.5 - Control new invasive plant infestations promptly, suppress or contain expansion of infestations where control is not practical, conduct follow up inspection of treated sites to prevent reestablishment.

**Goal 2** - Minimize the creation of conditions that favor invasive plant introduction, establishment and spread during land management actions and land use activities. Continually review and adjust land management practices to help reduce the creation of conditions that favor invasive plant communities.

Objective 2.1 - Reduce soil disturbance while achieving project objectives through timber harvest, fuel treatments, and other activities that potentially produce large amounts of bare ground.

Objective 2.2 - Retain native vegetation consistent with site capability and integrated resource management objectives to suppress invasive plants and prevent their establishment and growth.

Objective 2.3 - Reduce the introduction, establishment and spread of invasive plants during fire suppression and fire rehabilitation activities by minimizing the conditions that promote invasive plant germination and establishment.

Objective 2.4 - Incorporate invasive plant prevention as an important consideration in all recreational land use and access decisions. Use Forest-level Access and Travel Management planning to manage both on-highway and off-highway travel and travel routes to reduce the introduction, establishment and spread of invasive plants.

Objective 2.5 - Place greater emphasis on managing previously “unmanaged recreation” (OHVs, dispersed recreation, etc.) to help reduce creation of soil conditions that favor invasive plants, and reduce transport of invasive plant seeds and propagules.

**Goal 3** - Protect the health of people who work, visit, or live in or near National Forests, while effectively treating invasive plants. Identify, avoid, or mitigate potential human health effects from invasive plants and treatments.

Objective 3.1 - Avoid or minimize public exposure to herbicides, fertilizer, and smoke.

Objective 3.2 – Reduce reliance on herbicide use over time in Region Six (Proposed Action and Alternative B only).

**Goal 4** – Implement invasive plant treatment strategies that protect sensitive ecosystem components, and maintain biological diversity and function within ecosystems. Reduce loss or degradation of native habitat from invasive plants while minimizing adverse effects from treatment projects.

Objective 4.1 – Maintain water quality while implementing invasive plant treatments.

Objective 4.2 - Protect non-target plants and animals from negative effects of both invasive plants and applied herbicides. Where herbicide treatment of invasive plants is necessary within the riparian zone, select treatment methods and chemicals so that herbicide application is consistent with riparian management direction, contained in Pacfish, Infish, and the Aquatic Conservation Strategies of the Northwest Forest Plan.

Objective 4.3 - Protect threatened, endangered, and sensitive species habitat threatened by invasive plants. Design treatment projects to protect threatened, endangered, and sensitive species and maintain species viability.

**Goal 5** – Expand collaborative efforts between the Forest Service, our partners, and the public to share learning experiences regarding the prevention and control of invasive plants, and the protection and restoration of native plant communities.

Objective 5.1 - Use an adaptive management approach to invasive plant management that emphasizes monitoring, learning, and adjusting management techniques. Evaluate treatment effectiveness and adjust future treatment actions based on the results of these evaluations.

Objective 5.2 - Collaborate with tribal, other federal, state, local and private land managers to increase availability and use of appropriate native plants for all land ownerships.

Objective 5.3 - Work effectively with neighbors in all aspects of invasive plant management: share information and resources, support cooperative weed management, and work together to reduce the inappropriate use of invasive plants (landscaping, erosion control, etc.).

The Selected Alternative includes the Desired Future Condition, Goals and Objectives statements as written in the Proposed Action in the FEIS. These statements emphasize prevention of invasive plant introduction, establishment and spread; protection of ecosystems and human health; and collaboration with our partners and the public. The full text to be added to Forest Plans in the Region is shown in Appendix 1.

## *Prevention Standards*

### **Prevention Standard 1 - Objectives 1.1, 1.2, 2.3, 2.4, 2.5**

Prevention of invasive plant introduction, establishment and spread will be addressed in watershed analysis; roads analysis; fire and fuels management plans, Burned Area Emergency Recovery Plans; emergency wildland fire situation analysis; wildland fire implementation plans; grazing allotment management plans, recreation management plans, vegetation management plans, and other land management assessments.

### **Prevention Standard 2 - Objectives 1.1, 1.2, 2.3**

Actions conducted or authorized by written permit by the Forest Service that will operate outside the limits of the road prism (including public works and service contracts), require the cleaning of all heavy equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) prior to entering National Forest System Lands. This standard does not apply to initial attack of wildland fires, and other emergency situations where cleaning would delay response time.

### **Prevention Standard 3 - Objectives 1.1, 2.3**

Use weed-free straw and mulch for all projects, conducted or authorized by the Forest Service, on National Forest System Lands. If State certified straw and/or mulch is not available, individual Forests should require sources certified to be weed free using the North American Weed Free Forage Program standards or a similar certification process.

### **Prevention Standard 4 - Objectives 1.1, 2.5**

Use only pelletized or certified weed free feed on all National Forest System lands. If state certified weed free feed is not available, individual Forests should require feed certified to be weed free using North American Weed Free Forage Program standards or a similar certification process.

Choose weed-free project staging areas, livestock and packhorse corrals, and trailheads.

### **Prevention Standard 6 - Objectives 1.1, 5.1, 5.3**

Use available administrative mechanisms to incorporate invasive plant prevention practices into rangeland management. Examples of administrative mechanisms include, but are not limited to, revising permits and grazing allotment management plans, providing annual operating instructions, and adaptive management. Plan and implement practices in cooperation with the grazing permit holder.

**Prevention Standard 7 - Objectives 1.1, 1.2, 1.3**

Inspect active gravel, fill, sand stockpiles, quarry sites, and borrow material for invasive plants before use and transport.

Treat or require treatment of infested sources before any use of pit material.

Use only gravel, fill, sand, and rock that is judged to be weed free by District or Forest weed specialists.

**Prevention Standard 8 - Objectives 1.1, 1.2, 5.1**

Conduct road blading, brushing and ditch cleaning in areas with high concentrations of invasive plants in consultation with District or Forest-level invasive plant specialists, incorporate invasive plant prevention practices as appropriate.

**Prevention Standard 11 - Objectives 1.5, 5.1**

Prioritize infestations of invasive plants for treatment at the landscape, watershed or larger multiple forest/multiple owner scale.

**Prevention Standard 12 - Objectives 1.1, 5.1**

Develop a long-term site strategy for restoring/revegetating invasive plant sites prior to treatment.

**Prevention Standard 13 - Objectives 1.1, 1.4**

Native plant materials are the first choice in revegetation for restoration and rehabilitation where timely natural regeneration of the native plant community is not likely to occur. Non-native, non-invasive plant species may be used in any of the following situations: 1) when needed in emergency conditions to protect basic resource values (e.g., soil stability, water quality and to help prevent the establishment of invasive species), 2) as an interim, non-persistent measure designed to aid in the re-establishment of native plants, 3) if native plant materials are not available, or 4) in permanently altered plant communities. Under no circumstances will non-native invasive plant species be used for revegetation.

**Prevention Standard 14 - Objectives 1.4, 4.1, 4.2**

Use only APHIS and State-approved biological control agents. Agents demonstrated to have direct negative impacts on non-target organisms would not be released.

**Prevention Standard 15 - Objectives 1.4, 3.1, 4.1, 4.2**

Application of any herbicides to treat invasive plants will be performed or directly supervised by a State or Federally licensed applicator. All treatment projects that involve the use of herbicides will develop and implement herbicide transportation and handling safety plans.

**Prevention Standard 16 - Objectives 1.4, 3.1, 4.1, 4.2**

Select from herbicide formulations containing one or more of the following 10 active ingredients: chlorsulfuron, clopyralid, glyphosate, imazapic, imazapyr, metsulfuron methyl, picloram, sethoxydim, sulfometuron methyl, and triclopyr. Mixtures of herbicide formulations

containing 3 or less of these active ingredients may be applied where the sum of all individual Hazard Quotients for the relevant application scenarios is less than 1.0. 3

All herbicide application methods are allowed including wicking, wiping, injection, spot, broadcast and aerial, as permitted by the product label. Chlorsulfuron, metsulfuron methyl, and sulfometuron methyl will not be applied aerially. The use of triclopyr is limited to selective application techniques only (e.g., spot spraying, wiping, basal bark, cut stump, injection).

Additional herbicides and herbicide mixtures may be added in the future at either the Forest Plan or project level through appropriate risk analysis and NEPA/ESA procedures.

**Prevention Standard 18 - Objectives 3.1, 4.1, 4.2**

Use only adjuvants (e.g. surfactants, dyes) and inert ingredients reviewed in Forest Service hazard and risk assessment documents such as SERA, 1997a, 1997b; Bakke, 2003.

**Prevention Standard 19 - Objective 4.1)**

To minimize or eliminate direct or indirect negative effects to non-target plants, terrestrial animals, water quality and aquatic biota (including amphibians) from the application of herbicide, use site-specific soil characteristics, proximity to surface water and local water table depth to determine herbicide formulation, size of buffers needed, if any, and application method and timing. Consider herbicides registered for aquatic use where herbicide is likely to be delivered to surface waters.

**Prevention Standard 20 - Objectives 4.1, 4.2, 4.3**

Design invasive plant treatments to minimize or eliminate adverse effects to species and critical habitats proposed and/or listed under the Endangered Species Act. This may involve surveying for listed or proposed plants prior to implementing actions within unsurveyed habitat if the action has a reasonable potential to adversely affect the plant species. Use site-specific project design (e.g. application rate and method, timing, wind speed and direction, nozzle type and size, buffers, etc.) to mitigate the potential for adverse disturbance and/or contaminant exposure.

**Prevention Standard 21 - Objectives 3.1, 4.2**

Provide a minimum buffer of 300 feet for aerial application of herbicides near developed campgrounds, recreation residences and private land (unless otherwise authorized by adjacent private landowners).

**Prevention Standard 22 - Objectives 4.1**

Prohibit aerial application of herbicides within legally designated municipal watersheds.

**Prevention Standard 23 - Objective 3.1**

Prior to implementation of herbicide treatment projects, National Forest system staff will ensure timely public notification. Sign treatment areas to inform the public, and forest workers of herbicide application dates and herbicides used. If requested, individuals will be notified in advance of spray dates.

## Appendix B

### Colville National Forest Weed Prevention Guidelines

Objectives: Develop Colville National Forest Management guidelines to minimize the introduction of noxious weeds; minimize conditions that favor the establishment of noxious weeds; and minimize conditions that favor the spread of noxious weeds.

MANAGEMENT OBJECTIVE	1. MANAGEMENT PRACTICE
<p>1. EDUCATION: Ensure public and employee knowledge of noxious weeds to help reduce both the spread rate of existing weeds and the risk of infestation by new weeds.</p>	<p>1.1) Educate every employee on the National Forest regarding the problems associated with and the identification of noxious weeds. Add weed awareness to Employee Orientation, Fire Effects and other training. Report infestation to the appropriate District Noxious Weed Coordinator.</p> <p>1.2) Work to increase public (including contractors and permittees) awareness of noxious weeds and their potential negative impact on the environment. Use education programs to increase weed awareness and prevent weed spread</p> <p>1.3) Increase the level of educational material regarding weeds displayed at trailheads and District offices. Use education programs to increase weed awareness and prevent weed spread by recreationists and other Forest users. Post prevention practices at NFS trailheads, roads, boat launches, and other forest recreation facilities.</p> <p>1.4) Continue work with State, local and interested partners to develop additional educational materials that improve the understanding and identification of noxious weeds in Northeast Washington.</p> <p>1.5) Discuss weed prevention practices at annual grazing permittee meetings and contractor pre-work sessions.</p> <p>1.6) Coordinate weed prevention efforts with other agencies.</p>
<p>2. PROJECT NEED: Weigh the need of the proposed project against the risk of weed infestation.</p>	<p>2.1) In the earliest stages of project consideration, look at the risks of weed infestation and the long-term consequences of dealing with weeds. Determine if the project is worth pursuing. The project need must exceed the risk of implementation.</p> <p>2.2) Evaluate the need for any ground disturbing activity and ways to minimize the possible effects of implementation, e.g. winter logging, minimizing openings.</p> <p>2.3) Be realistic during project size-up. What are the chances of success? Are the costs realistic?</p>
<p>3. MINIMIZE TRANSPORTATION OF WEED SEED: Reduce the spread of existing weeds across the Forest and the risk of introducing new weed species to project sites and other areas of the Forest.</p>	<p>3.1) Remove mud, dirt, and plant parts from all off-road equipment (road construction equipment, rock crushers, ATV's, fire equipment, etc.) before moving into a new or different project area. Cleaning must occur in areas where removed weed seed will not create additional problems. (This does not apply to service vehicles that stay on the roadway, traveling frequently in and out of the project area).</p> <p>3.2) When possible, keep active road construction sites closed to vehicles not involved with construction.</p> <p>3.3) Use only weed-free mulch on surface soil stabilization and erosion control projects. Minimize the use of straw unless the source is known to be weed free.</p> <p>3.4) Require the use of pelletized feed or Washington State weed free feed (when it becomes available) for all pack animals in backcountry. Encourage the development of a Washington State</p>

MANAGEMENT OBJECTIVE	1. MANAGEMENT PRACTICE
	<p>Weed Free Feed Certification program.</p> <p>3.5) Treat weeds at all Forest Service administrative sites including Ranger Stations, trailheads, boat launches, campgrounds, airstrips, interpretive and historic sites, and roads leading to trailheads.</p> <p>3.6) Encourage motorized trail users to inspect and clean their vehicles prior to using NFS lands.</p> <p>3.7) Require all Forest Service employees to inspect, remove, and properly dispose of weed seed and plant parts found on their clothing and personal equipment prior to leaving a project site.</p> <p>3.8) Consider using transitional pastures when moving livestock from weed infested areas onto NFS lands. (Transitional pastures are designated fenced areas that can be logistically and economically maintained in a weed-free condition)</p> <p>3.9) All gravel and borrow sources must be inspected before use. Active gravel and borrow sources should be kept in a weed-free condition. If weeds are present, strip and stockpile the top 8" of contaminated material to reduce transport of buried weed seed to other sites.</p> <p>3.10) Whenever possible, establish fire camps, vehicle and crew staging areas, helibases, helispots, and airstrips in areas inspected and verified as weed-free.</p> <p>3.11) Work with other jurisdictions to identify and limit boat trailer introduction of aquatic weeds to small lakes within the forest boundaries.</p> <p>32.1) All active gravel and barrow sources must be inspected before use and transport. If weeds are present, strip at least the top 8" and stockpile contaminated material to reduce transport of buried weed seed. Treat weeds at new pits where widespread weeds are present before transport and use. (Requirement)</p> <p>30.2) Remove all mud, dirt, and plant parts from rock crushers before entering NFS lands. Cleaning must occur off NFS lands. (Requirement)</p> <p>30.3) <b>New Pits:</b> Do not establish new material sources in areas where new weeds are present. Where widespread weeds occur at new pit sites, strip at least the top 8" and stockpile contaminated material. Treat weeds at new pits where widespread weeds are present. (Requirement)</p>
<p>4. INCORPORATE WEED PREVENTION MEASURES INTO PROJECT PLANNING AND DESIGN, AND SPECIAL USE PERMIT ADMINISTRATION: Ensure that the risks of weed introduction and/or spread, and the mitigation required to minimize that risk are properly considered before ground disturbing activities begin.</p>	<p>4.1) Environmental analyses for ANY and ALL ground disturbing projects will consider weed prevention and risk in the development and evaluation of alternatives and mitigating measures. Silvicultural prescriptions, logging plans, mining operation and/or reclamation plans will include weed prevention measures (e.g. shade retention and minimal soil disturbance) .</p> <p>4.2) Consider weed risk and spread factors in travel plan (road closure) decisions. Consider road closures in areas that are weed free and/or at unusually high risk to weed invasion.</p> <p>4.3) Incorporate weed prevention into road layout and design. Minimize the removal of trees and other roadside vegetation during road construction, reconstruction, and maintenance, particularly on southerly aspects. Design roads that are self-maintaining, e.g. outslope roads, rolling dips, take advantage of natural features. Design roads for revegetation success by saving and applying topsoil, laying back slopes, etc.</p> <p>4.4) During trail planning and alternative development, evaluate weed risk factors (presence of weeds, habitat type, aspect,</p>

MANAGEMENT OBJECTIVE	1. MANAGEMENT PRACTICE
	shading, etc.) when determining trail location and design. 4.5) Incorporate timber sale provisions CT6.6, ( weed free seed) and CT6.343, Opt 2 (cleaning off road equipment) in all timber sale contracts. 4.6) Include weed prevention and control measures in all special use permits that involve ground disturbance. 4.7) When administering FRTA (Forest Roads and Trails Act) and private road easements, require appropriate weed control measures. 4.8) Develop weed management plans with grazing permittees for each allotment, include: minimizing ground disturbance (at salt licks, watering sites, yarding/loafing areas, corrals and other heavy use areas), weed seed transportation, maintaining healthy vegetation, weed control methods, revegetation, monitoring, reporting and education. (See 3.8). 4.9) Plan for and collect KV or other funds to treat soil disturbance or weeds as needed after timber harvest and regeneration activities when possible. 4.10) Plan and apply for flood and/or fire rehabilitation funding to treat weed infestations not treated effectively the first growing season after the disturbance event. 4.11) When possible, coordinate the timing of road maintenance activities and weed control activities. Delay blading roads within two weeks of herbicide application. Delay spraying after blading until vegetative regrowth has occurred.
5. PRE-ACTIVITY, INVENTORY AND ANALYSIS: Minimize the spread of existing weeds into new project areas.	5.1) Perform pre-activity inventory and develop site specific plans for treatment of existing noxious weed populations. 5.2) Before construction equipment moves into a project area, treat seed-bearing noxious weed plants along existing Forest Service access roads leading to the project area. Pretreat existing weed infestations prior to creating new seed beds. 5.3) Treat weeds in road obliteration, closure, and reclamation projects before roads are made un-driveable. Monitor and retreat as necessary. 5.4) Treat pre-existing and proposed landings, skid trails and helibases that are weed infested before logging. 5.5) Where practical, treat high risk areas for weed infestations (e.g. roads, disturbed ground) before burning. Monitor and retreat after burning if necessary.
6. MINIMIZE GROUND DISTURBANCE AND THE EXPOSURE OF MINERAL SOIL DURING PROJECT ACTIVITIES: Reduce the potential for weeds to become established on new sites and the need to conduct revegetation activities.	6.1) Minimize soil disturbance and conserve existing topsoil (A and B soil horizons) for replacement whenever possible in situations where ground disturbing activities are unavoidable. 6.2) Reduce disturbance when doing road maintenance. Limit the amount of ditch pulling only to the amount necessary to assure proper drainage. Limit blading to running surfaces and the minimum necessary on road shoulders. 6.3) Maintain desirable roadside vegetation. If desirable vegetation is removed during blading or other ground disturbing activities, that area must be revegetated. 6.4) Armor areas that are constantly disturbed (e.g. cattle watering sites) at road/stream crossings. 6.5) During timber sale activities minimize soil disturbance to meet prescription levels. Select skidding and burning methods that minimize weed establishment or spread. 6.6) Minimize skid trails and the number and size of landings. 6.7) Minimize fireline and associated soil disturbance during

MANAGEMENT OBJECTIVE	1. MANAGEMENT PRACTICE
<p>7. REVEGETATE DISTURBED AREAS: Re-establish desirable vegetation on exposed mineral soil due to project activity and unplanned events such as: fire, flood, or other disturbances to minimize the introduction and/or spread of noxious weeds.</p>	<p>prescribed burning.</p> <p>7.1) Evaluate disturbed sites and develop site-specific prescriptions for revegetation that include measurable outcomes.</p> <p>7.2) Reduce or eliminate the time lag between the ground disturbing activity and revegetation efforts.</p> <p>7.3) Monitor, as possible, revegetation success and re-seed as necessary if germination or survival rates do not meet objectives.</p> <p>7.4) Select regeneration species, whether native or introduced, that will occupy the site and compete successfully against noxious weeds. Use "Prohibited and Restricted Noxious Weed Free for the State of Washington." seed, when compatible with site objectives. Select for low nutrient demanding species to reduce the need for follow-up fertilization</p> <p>7.5) Avoid use of fertilizer in areas with high infestation of weeds where fertilizer may favor growth and spread of weeds over desirable species.</p> <p>7.6) If fertilizer is determined to be beneficial, based on soil analysis and cost effective, apply fertilizer one year after germination and establishment of grass has occurred. All contracts must include specific language for revegetation prescriptions, including the timing of application of fertilizer, if applied. When doing road maintenance activities, promptly revegetate.</p> <p>7.7) Promptly revegetate roadside drainage structures after cleaning if vegetation is removed.</p> <p>7.8) Seeding of back country sites with appropriate non-native species should only occur when it has been determined that native species will not be successful and the risk of weed infestation is high.</p> <p>7.9) Minimize and/or exclude grazing on restoration areas if not compatible with achieving revegetation efforts.</p> <p>7.10) During revegetation, consider the need to treat weeds on adjacent access roads to reduce seed spread into the newly disturbed areas.</p>
<p>8. MONITOR: Conduct project follow-up and review to determine success of weed treatments and revegetation efforts and detect new weed sites requiring treatment and make corrections as necessary. Monitoring is a part of every project and as such, needs to be covered in NEPA discussions, and planned for as part of implementation.</p>	<p>8.1) Conduct treatment and post activity monitoring plans as part of the treatment of noxious weeds, <i>using measurable objectives</i></p> <p>8.2) Develop and maintain a consistent record keeping system not only across the Forest but also with other agencies, including appropriate GIS layers (e.g. county weed boards).</p> <p>8.3) Monitor all revegetation efforts and repeat them as necessary to insure successful site revegetation.</p> <p>8.4) Incorporate monitoring and reporting of weed species into road maintenance programs.</p> <p>8.5) Monitor areas of concentrated livestock use for weed establishment. Treat new infestations.</p> <p>8.6) Monitor and treat weed infestations at landings and on skid trails after harvest.</p> <p>8.7) Monitor and treat emerging weeds on stockpiled material at new and existing gravel and borrow pits. Monitor the area where pit material is used and ensure that no weed seeds are transported to the use site.</p> <p>8.8) Conduct post fire monitoring to identify weed spread until desirable vegetation is established..</p> <p>8.9) Retain performance bonds from mining operations until revegetation objectives are achieved.</p> <p>8.10) Survey bodies of water often for early detection and easier</p>

<b>MANAGEMENT OBJECTIVE</b>	<b>1. MANAGEMENT PRACTICE</b>
	control of noxious aquatic weeds.

DRAFT